

## HR-283 Pavement Texturing by Milling

**Key Words:** Pavement texture, Milling, Carbide tooth milling, smoothness

### ABSTRACT

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Iowa DOT research in 1986, demonstrated that carbide tooth milling can produce an acceptable surface texture. Based upon that re-search, specifications were developed for "Pavement Surface Repair (Milling)". This specification was applied to reprofile a nine-mile section of badly faulted portland cement concrete (PCC) pavement on route 163 just east of Des Moines. The Profile Index (measured with a 25-foot California Profilograph) was improved from an average of 55.2 inches per mile prior to milling to 10.6 inches per mile after milling. The bid price was \$0.75 per square yard for PCC containing limestone coarse aggregate and \$1.21 for PCC containing gravel coarse aggregate. Carbide tooth milling should be considered as an acceptable alternate method of reprofiling even though there is some spalling of joints.

### Other Projects

Experience has shown that milling machines with carbide tipped teeth have the capability of profiling most asphalt cement concrete (ACC) and PCC pavements. Most standard milling operations today leave a very coarse, generally objectionable surface texture. This research utilized a Cedarapids Wirtgen **1900C** mill modified by adding additional teeth. There were 411 teeth at a 5 millimeter transverse spacing (standard spacing is 15 mm) on a 6 ft. 4 in. long drum. The mill was used to profile and texture the surface of one AC and two PCC pavements.

A 1000 ft. section of rutted (1/2 in. deep) AC pavement was milled. The automatic sensing unit of the mill was used to remove approxi-mately 1/2 in. of the surface. This removed almost all of the rutting. With a drum speed of 100 r.p.m. and a forward speed not to exceed 30 ft. per minute, a very acceptable surface texture was obtained.

The mill was also used to profile a 1500 ft. section of badly faulted PCC pavement containing a crushed limestone coarse aggre-gate and a 200 ft. section of PCC pavement containing a gravel coarse aggregate. This milling operation did cause objectionable spalling of the transverse contraction joints on the PCC pavement. The spalling can be prevented by filling the transverse joints with a rapid set patching material prior to the milling operation.

